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10/615,772	07/10/2003	Mickaele Le Ravalec-Dupin	612.42904X00	5959
20457 7590 05/28/2008 ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-3873				
EXAMINER				
SILVER, DAVID				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/615,772

Applicant(s)

LE RAVALEC-DUPIN ET AL.

Examiner

DAVID SILVER

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 27-42 are currently pending in Instant Application.
2. The Instant Application is not currently in condition for allowance.

Priority

3. Claimed priority has been acknowledged in previous Office Action (**7/11/02**).

Response to Arguments

Response: Claim Objections

4. Claim objections have been **withdrawn** in view of amendments and remarks.

Response: 35 U.S.C. § 101

5. Applicants are thanked for amending the claims and presenting the arguments on (**Remarks: page 7 bottom - page 10 bottom**). Applicants' arguments have been fully considered and are found persuasive. The 35 U.S.C. § 101 rejection is withdrawn accordingly.

Response: 35 U.S.C. § 112

6. Applicants arguments on page 11 first two paragraphs have been fully considered. In view of amendments and remarks, the 35 U.S.C. § 112 P1 / P2 rejections have been withdrawn.

Response: 35 U.S.C. § 102 / 103

7. Applicants argue:

- 7.1 "It is submitted that Rouffignac et al in none of the referenced paragraphs discloses "a simulation of fluid flows, to estimate corrections to the applied to said permeabilities in order to reduce a difference between said simulated production data or simulated pressure data obtained from well tests and said simulated production or pressure data." For example, the reference to simulation of H2 in paragraph [0961] has nothing to do with the foregoing subject matter.
- 7.2 Moreover, since the result of subparagraph c) of claim 27 is to estimate corrections, the claimed propagating of corrections in step d) is also not taught by Rouffignac et al.
- 7.3 Dependent claims 28, 31-32, 35-36 and 39-40 are patentable for the same reasons as set forth above with respect to claim 27."

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7.4 "Claims 27-28, 31-32, 35-36 and 39-40 stand rejected under 35 U.S.C. 103 as being unpatentable over United States Patent 6,826,520 (Kahn) in view of Rouffignac et al. The Examiner concludes that Kahn teaches step c) in column 5, lines 51-61, and column 12, lines 42-59, and further teaches step d) in column 11, lines 6-12. This ground of rejection is traversed for the following reasons.

7.5 Column 5, lines 51-61, and column 12, lines 42-55, disclose a flow based method for upscaling permeabilities associated with a fine-scale geologic grid system. This subject matter has nothing to do with the subject matter of step c) to estimate corrections to be applied to said permeabilities in order to reduce a difference between said simulated production data or simulated pressure data obtained from well tests and said simulated production or pressure data. Moreover, column 11, lines 6-12, pertains to the expression of equation 5 using a known relationship which does not pertain to propagating said corrections of step d) as calculated in step c)." (Remarks: page 12-13)

8. **Examiner Response:**

8.1 Regarding subsection 1 *supra*, Applicants are arguing features which are drawn to intended use and are accordingly not given patentable weight. Specifically, the emphasized portion is intended use and is not necessitated by claim language, and, in accordance with MPEP 2111.04 is not given patentable weight: "calculating permeabilities of said zones and estimating simulated production data or simulated pressure data by carrying out, by means of a simulator, a simulation of fluid flow, to estimate corrections to be applied to said permeabilities in order to reduce a difference between said production or simulated pressure data". Applicants have admitted that simulation flow is indeed taught by the applied reference.

8.2 Regarding subsection 2 and 3, *supra*, Applicants' arguments are conclusionary based on the arguments presented for step c), which was respectfully traversed above. Applicants' arguments in subsections 4 and 5 *supra* are traversed with same reasoning as presented for argument in subsection 1 *supra*. Further, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re*

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Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

8.3 Nevertheless, in order to further prosecution in a compact manner, new grounds of rejection are presented below, necessitated by amendment.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 27-28, 31-32, 35-36, 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Rouffignac (**US 20020029882**) above, and in view of Gurpinar (**US 20050149307**).

Rouffignac discloses: 27. A method for constructing a reservoir model representative of an underground reservoir, including discretizing said reservoir by a set of grid cells, and associating with said reservoir model a permeability field constrained by a priori geologic data and production data or pressure data obtained from well tests collected in said reservoir comprising:

a) constructing an initial reservoir model including generating a permeability field (**para 521**) in accordance with a stochastic model (**para 951**), coherent with the a priori geologic data (**para 570**);

b) identifying zones inside said underground reservoir (**para 55, 22, 366**);

c) calculating effective permeabilities of said zones and estimating simulated production data or simulated pressure data by carrying out, by means of a simulator, a simulation of fluid flows (**para 739, 112, 521, 874, 952**), to estimate corrections to be applied to said permeabilities;

d) propagating said corrections to said set of grid cells of said underground reservoir model, by means of an iterative optimization process comprising minimizing a function which depends on said corrections, using a technique of gradual deformation of realizations of said stochastic model (**para 64**,

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961, 408, 482); and

e) using said underground reservoir model, including said correction propagated to said set of grid cells, to develop said underground reservoir **(38, 987)**.

Rouffignac however does not explicitly disclose "in order to reduce a difference between said production data or pressure data obtained from well tests and said simulated production or simulated pressure data".

Gurpinar however discloses an analogous system having the said feature **(para 33 and 37)**.

It would have been obvious to one of ordinary skill in the art <well engineering / simulation / planning> at the time of Applicant's invention to combine the references in order to predict and have a more precise well reservoir model by correlating and feeding back simulated data with real data; thereby, getting a more accurate model - saving time and money associated with reworking.

Rouffignac discloses: 28. The method as claimed in claim 27 comprising using said reservoir model to develop an oil reservoir **(38, 987, 19, 584)**.

Rouffignac discloses: 31. The method as claimed in claim 27, wherein said zones are identified as volume portions on a periphery of wells running through said reservoir **(para 277)**.

As per claims 32, note the rejection of claims 31 above. The Instant Claims recite substantially same limitations as the above-rejected claims and are therefore rejected under same prior-art teachings.

Rouffignac discloses: 35. The method as claimed in claim 27, wherein at least one gradual deformation parameter is assigned to each of said zones **(para 950)**.

As per claims 36, 39-40, note the rejection of claims 35 above. The Instant Claims recite substantially same limitations as the above-rejected claims and are therefore rejected under same prior-art teachings.

10. Claims 27-28, 31-32, 35-36, 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Khan **(US 6,826,520)** above, and in view of Rouffignac **(US 20020029882)**, and in view of Gurpinar **(US 20050149307)**.

As per claim 27, Khan discloses a method for constructing a reservoir model representative of an underground reservoir, including discretizing said underground reservoir by a set of grid cells, and

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associating with said underground reservoir model a permeability field comprising: a) constructing an initial reservoir model including generating a permeability field in accordance with a stochastic model, coherent with the a priori geologic data (**Fig 1 and description, col: 5 line: 51-61**); b) identifying zones inside said underground reservoir (**col: 5 line: 51-61**); c) calculating permeabilities of said zones and estimating simulated production data or simulated pressure data by carrying out, by means of a simulator, a simulation of fluid flows (**col: 5 line: 51-61**), to estimate corrections to be applied to said permeabilities (**col: 12 line: 42-59**); d) propagating said corrections to said set of grid cells of said underground reservoir model, by means of an iterative optimization process comprising minimizing a function which depends on said corrections, using a technique of gradual deformation of realizations of said stochastic model (**col: 11 line: 6-12**). Khan however does not expressly disclose a permeability field constrained by a priori geologic data and production data or pressure data obtained from well tests collected in said underground reservoir and e) using said underground reservoir model, including said correction propagated to said set of grid cells, to develop said underground reservoir. Rouffignac however discloses the said features (**para 570, 38, 987**). It would have been obvious to one of ordinary skill in the art <reservoir simulation, modeling, and development> at the time of Applicant's invention to combine the references in order to 1) use real results from well tests as inputs such that the simulation results are more accurate and reflect real-world situations.

Rouffignac however does not explicitly disclose "in order to reduce a difference between said production data or pressure data obtained from well tests and said simulated production or simulated pressure data".

Gurpinar however discloses an analogous system having the said feature (**para 33 and 37**).

It would have been obvious to one of ordinary skill in the art <well engineering / simulation / planning> at the time of Applicant's invention to combine the references in order to predict and have a more precise well reservoir model by correlating and feeding back simulated data with real data; thereby, getting a more accurate model - saving time and money associated with reworking.

Rouffignac discloses: 28. The method as claimed in claim 27 comprising using said reservoir model to

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develop an oil reservoir **(38, 987, 19, 584)**.

Rouffignac discloses: 31. The method as claimed in claim 27, wherein said zones are identified as volume portions on a periphery of wells running through said reservoir, **(para 277)**.

As per claims 32, note the rejection of claims 31 above. The Instant Claims recite substantially same limitations as the above-rejected claims and are therefore rejected under same prior-art teachings.

Rouffignac discloses: 35. The method as claimed in claim 27, wherein at least one gradual deformation parameter is assigned to each of said zones **(para 950)**.

As per claims 36, 39-40, note the rejection of claims 35 above. The Instant Claims recite substantially same limitations as the above-rejected claims and are therefore rejected under same prior-art teachings.

11. Claims 29-30, 33-34, 37-38, and 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khan **(US 6,826,520)** above, and in view of Rouffignac **(US 20020029882)**, as applied to claim 27, and in view of Gurpinar **(US 20050149307)**, and further in view of Cullick **(US 6,549,879)**.

As per claim 29, the combination of Khan, Rouffignac, and Gurpinar fully discloses claim 27. The combination however does not expressly disclose A method as claimed in claim 27, wherein flow simulation is carried out by means of a streamline simulator, said zones of said underground reservoir are identified by a set of grid cells traversed by one or more streamlines of fixed geometry and said zones are defined either manually or automatically from said flow simulator (para 621). Cullick however discloses the said feature **(col: 5 line: 33-39, col: 7 line: 40-51)**. It would have been obvious to use the streamline simulation as it is significantly faster than traditional permeability simulations and thus saves time and costs associated therewith.

As per claim 30, the combination of Khan, Rouffignac, and Gurpinar fully discloses claim 27. The combination however does not expressly disclose a method as claimed in claim 27, wherein flow simulation is carried out by means of a streamline simulator and said zones of said underground reservoir are identified by a set of grid cells traversed by one or more streamlines of fixed geometry. Cullick however discloses the said feature **(col: 5 line: 33-39, col: 7 line: 40-51)**. It would have been

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obvious to use the streamline simulation as it is significantly faster than traditional permeability simulations and thus saves time and costs associated therewith.

As per claims 33-34, 37-38, and 41-42, note the rejection of claims 31 and 35 above. The Instant Claims recite substantially same limitations as the above-rejected claims and are therefore rejected under same prior-art teachings in view of the combination above.

Support for Amendments and Newly Added Claims

Applicants are respectfully requested, in the event of an amendment to claims or submission of new claims, that such claims and their limitations be directly mapped to the specification, which provides support for the subject matter. This will assist in expediting compact prosecution. MPEP 714.02 recites: "Applicant should also specifically point out the support for any amendments made to the disclosure. See MPEP § 2163.06. An amendment which does not comply with the provisions of 37 CFR 1.121(b), (c), (d), and (h) may be held not fully responsive. See MPEP § 714." **Amendments not pointing to specific support in the disclosure may be deemed as not complying with provisions of 37 C.F.R. 1.131(b), (c), (d), and (h) and therefore held not fully responsive.** Generic statements such as "Applicants believe no new matter has been introduced" may be deemed insufficient.

Conclusion

12. All claims are rejected.
13. The Instant Application is not currently in condition for allowance.
14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH

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shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Silver whose telephone number is (571) 272-8634. The examiner can normally be reached on Monday thru Friday, 10am to 6:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on 571-272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Kamini S Shah/

Supervisory Patent Examiner, Art Unit 2128

/ DS / _____
David Silver, Patent Examiner
Art Unit 2128